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What Is Claimed Is:

1           1. A system comprising:  
2            a process chamber having a feed inlet, a  
3            low pressure outlet and a high pressure outlet;  
4            a feed pump;  
5            a common shaft having rotatably coupled  
6            thereto a booster pump fluidically coupled between  
7            said feed pump and said feed inlet and an energy  
8            recovery turbine fluidically coupled to said high  
9            pressure outlet through a first channel, said energy  
10          recovery turbine drives said booster pump; and  
11          a second channel fluidically coupling said  
12          process chamber and said high pressure outlet.

1           2. A system as recited in claim 1 wherein  
2            said process chamber has a first reverse osmosis  
3            membrane therein.

1           3. A system as recited in claim 1 wherein  
2            said low pressure outlet comprises a permeate outlet.

1           4. A system as recited in claim 1 wherein  
2            said high pressure outlet comprises a concentrate  
3            outlet.

1           5. A system as recited in claim 1 further  
2            comprising a first control valve coupled between said  
3            booster pump and said feed pump.

1           6. A system as recited in claim 1 further  
2            comprising a second control valve coupled within said

3 second channel and directing concentrate between said  
4 feed pump and said booster pump.

1           7. A system as recited in claim 1 further  
2 comprising a jet pump fluidically coupled to the  
3 second channel to couple the high pressure outlet to  
4 said feed pump outlet.

1           8. A system as recited in claim 7 wherein  
2 said jet pump ~~is~~ coupled between said feed pump and  
3 said booster pump.

1           9. A system as recited in claim 8 wherein  
2 said jet pump is coupled between said booster pump  
3 and said process chamber.

1           10. A reverse osmosis system comprising:  
2           a reverse osmosis process chamber having a  
3 first feed inlet, a first permeate outlet and a first  
4 concentrate outlet;  
5           a feed pump;  
6           a common shaft having rotatably coupled  
7 thereto a booster pump fluidically coupled between  
8 said feed pump and said first feed inlet and an  
9 energy recovery turbine fluidically coupled to said  
10 first concentrate outlet through a first channel,  
11 said energy recovery turbine driving said booster  
12 pump; and  
13           a second channel coupled to said first  
14 concentrate outlet for directing a portion of said  
15 concentrate between said booster pump and said feed  
16 inlet.

1                 11. A system as recited in claim 10  
2 wherein said second channel directs concentrate  
3 between said feed pump and said energy recovery  
4 turbine.

1                 12. A system as recited in claim 10  
2 wherein said second channel directs said concentrate  
3 between said energy recovery turbine and said process  
4 chamber.

1                 13. A system as recited in claim 10  
2 further comprising a jet pump coupling said second  
3 channel to said feed pump outlet.

1                 14. A system as recited in claim 13  
2 wherein said jet pump is coupled between said feed  
3 pump and said booster pump.

1                 15. A system as recited in claim 13  
2 wherein said jet pump is coupled between said booster  
3 pump and said process chamber.

1                 16. A method of operating a process having  
2 a feed pump directing fluid to a process chamber  
3 having a high pressure outlet and a low pressure  
4 outlet comprising the steps of:

5                 boosting a pressure of fluid output from a  
6 feed pump prior to entering to a first process  
7 chamber ~~using~~ from a first portion of a high pressure  
8 fluid from a high pressure outlet of a first process  
9 chamber;

10                 recirculating a second portion of the high  
11 pressure fluid; and

12                         fluidically coupling the second portion of  
13       the high pressure fluid between the feed pump and the  
14       process chamber.

1                         17. A method as recited in claim 16  
2       further comprising the steps of providing first  
3       energy recovery turbine coupled to a booster pump to  
4       preform the step of boosting.

1                         18. A method as recited in claim 16  
2       further comprising the steps of providing a jet pump  
3       to preform the step of fluidically coupling.

1                         19. A method as recited in claim 16  
2       further comprising the steps of fluidically coupling  
3       a pumped fluid input of the jet pump to the second  
4       portion of high pressure fluid and fluidically  
5       coupling a driving fluid input to fluid output from  
6       the feed pump.

1                         20. A method as recited in claim 16  
2       further comprising the steps of fluidically coupling  
3       a pumped fluid input of the jet pump to fluid output  
4       from the feed pump and fluidically coupling a driving  
5       fluid input to the second portion of high pressure  
6       fluid.